# SUPPLY LINES WITH THE SOURCE

NEWSLETTER OF THE NHDES DRINKING WATER & GROUNDWATER BUREAU
ON THE WEB AT WWW.DES.NH.GOV/DWGB

SPRING 2008


## New Hampshire Selected For Innovative "Land and Water" Project

This winter, New Hampshire was one of three states selected to receive assistance from a team of national experts who will identify opportunities to better align land conservation, land use development and land use management programs with water resource protection objectives, particularly the protection of drinking water sources. While some state programs are responsible for managing water resources, others permit or engage in land use activities that may affect water resources. Ideally, decisions made by different state programs should complement each other and result in the most sustainable use of land and water resources. While state agencies must consider "smart growth" principles when providing advice, expending funds, or distributing grant monies, the Land and Water Project provides a unique opportunity to evaluate how state programs and policies can be changed to further protect sources of drinking water.

The team of national experts from the Trust for Public Land, the National Smart Growth Leadership Institute, the River Network and the Association of State Drinking Water Administrators will focus on determining which policies or programs support or conflict with source water protection goals. The New Hampshire Department of Environmental Services and the Office of Energy and Planning staff are providing support for this effort. On March 3, DES organized a "kick-off" meeting, inviting over 100 partners or representatives from a variety of organizations to discuss the project and exchange ideas. Since the kick-off meeting, the national partners have been interviewing key state officials and conducting research necessary to craft detailed recommendations that will be compiled into an action plan for state programs and policymakers.

This is a particularly opportune time for New Hampshire to make use of outside expertise to better align state land use and water protection programs and incorporate key findings into policies and plans. New Hampshire is in the midst of broad-scale, legislatively-driven water resources planning efforts, including Phase I of the State Water Resources Plan process and the Source Water Protection Strategy update, both scheduled for completion in the fall. At the same time, DES is revamping several key programs concerning shoreland protection and large land development. For more information concerning the Land and Water Project, visit www.des.nh.gov/dwspp or contact Paul Susca at (603) 271-7061. ■

## Make Plans to Attend the 2008 Source Water Protection Workshop

The 2008 Source Water Protection Workshop will be held on Monday, May 19 at the New Hampshire Technical Institute in Concord. The annual event offers land use planners, water supply managers and local officials a mix of useful tools, current research, applied projects and guidance concerning source protection. Continuing education credits will be offered for water supply operators attending this event. The workshop sold out a month in advance last year, so register early! For more information about the workshop, visit www.des.nh.gov/-dwspp or contact Pierce Rigrod at (603) 271-0688 or Pierce.Rigrod@des.nh.gov, or Alicia Carlson at (603) 271-4071 or Alicia.Carlson@des.nh.gov.

# Spotlight on ... Community Forests

## Conserving Forest Land, Protecting Local Water Supplies and Building Community Assets

**Martha West Lyman**
**Community Forest Collaborative[1], Director, Community Forest Program, Quebec-Labrador Foundation/Atlantic Center for the Environment**

Community ownership and management of forest land to conserve water supplies and quality is not a new idea – rather it is an old idea with new relevance.

Over the course of the state's history almost all of the towns in New Hampshire have, in one way or another, acquired parcels of forest land. There are several examples, however, where a town or municipal waterworks (e.g., Concord, Hanover, Keene, Manchester, Nashua) has set out to acquire forest land or abandoned agricultural land for reforestation, specifically to protect municipal water supplies.[2] This was based on the knowledge that protecting forests reduces erosion and sedimentation in surface waters, improves water purity by acting as a natural filter, and helps to capture and store water.

The Paul T. Doherty Memorial Forest in Gorham stands as an exemplary model of a town that purchased forest land to protect water supplies and, in so doing, acquired a valuable community asset. In 1936, visionary citizens acquired 3,380 acres of land for $41,531. They did so out of concern that the town's water quality and supply was vulnerable to increasingly intensive harvesting practices and uncertainties about who would own the land. For over 50 years, the land was left alone for the sole purpose of protecting the watershed for two ponds that served as the town's water supply. In 1990, the town decided to take a more proactive approach to managing the forest and has not only continued to ensure a high quality source of drinking water, but also produced expanded benefits for the town. The town hired a professional forester, developed a management plan and based management decisions on the primary goal of protecting the town's municipal water supply. Over the last decade or more, the town has received revenues from timber harvesting that have supported the renovation of the Gorham Town Hall, the construction of a multiple use access trail and emergency route for the town, and provided an outdoor classroom for the middle school and high school.[3]

The practice that began over a century ago of conserving forest land to protect water quality and supplies has been affirmed by recent research. A 2002 study by the Trust for Public Land determined that "water treatment costs for utilities using primarily surface water supplies varied depending on the amount of forest cover in the watershed … for every 10 percent increase in forest cover in the source area (up to about 60 percent forest cover), treatment and chemical costs *decreased* approximately 20 percent."[4]

As communities face increasing demands for water, as well as increasing costs of treating existing supplies, community ownership and management of forest land offers an effective water conservation strategy as well as a wise investment in a community asset. ■

**Community Forests Footnotes**:

[1] The Community Forest Collaborative is a partnership of the Trust for Public Land, Northern Forest Center and the Quebec-Labrador Foundation/Atlantic Center for the Environment. The Collaborative seeks to marshal resources to expand community ownership and management of forest land.

[2] Robert McCullough. 1995. *The Landscape of Community: A History of Communal Forests in New England*. University Press of New England. Hanover, NH.

[3] See case study on the Paul T. Doherty Memorial Forest in *Community Forests: A Community Investment Strategy*. Published by the Community Forest Collaborative. Available online at www.northernforest.org/community-forests.

[4] Caryn Ernst, Richard Gullick, Kirk Nixon. 2004. *Protecting the Source: Conserving Forests to Protect Water*. American Water Works Assn. Opflow. Vol 30, No. 5. May 2004.

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# Frequently Asked Questions

## *New* Analysis Request Forms (aka Chain of Custody)

The new analysis request form (ARF) is now available online at DES's OneStop website. It can be found within the electronic version of a water system's master sampling schedule (MSS). The ARFs are pre-printed and pre-populated forms containing the DES designated compliance sampling site location and related "chain of custody" information. Public water systems collecting additional samples that are not for compliance purposes should submit the new ARF titled *General System Evaluation Samples* (GSES). Below are some commonly asked questions and answers associated with using this form.

**Can I take a sample using the GSES ARF and then decide later to use it for compliance?** No. Only use the GSES ARF for preliminary testing and evaluation samples to determine the effectiveness of treatment.

**What if I collected a sample from the wrong site? Or, what if I collected a compliance sample from the correct site but used a GSES ARF?** Since sample collection and analysis is a legal, regulated process, a formal correction must be initiated by the PWS through the laboratory. As with any sampling or reporting error, the person who collected the sample must send a letter/email to the laboratory that performed the analysis to request a change. The letter or email should include the PWS's EPA ID#, sample ID # and description, date of analysis, and an explanation of the error. This request should include the correct sample ID# and location and any other information needing correction. A new laboratory report will be generated by the accredited lab and sent to DES. If sampling or reporting errors occur and a compliance sample was not collected in the appropriate quarter, a violation will be issued which may require public notice.

**If I am taking samples to evaluate treatment, do I have to use the GSES ARF?** No. The form was created to assist PWSs who want to collect extra samples that are not for compliance purposes, e.g., evaluating treatment. The results of such samples may be reviewed by the DES engineer/inspector only when the level is greater than the MCLs for the acute contaminants, e.g., bacteria and nitrate/nitrite. DES will then contact you to help assess the situation. It is important to keep in mind that when a sample exceeds the MCL for nitrate/nitrite or *E. coli*, public health is at risk. If GSES ARF results are not sent to DES when an exceedance occurs, the liability for any negative consequences falls directly on the owner/operator of the system.

**What if the GSES ARF says my system chlorinates and we do not (or vice versa)?** If any of the information is not correct, please notify Linda Thompson at (603) 271-3544 or Linda.Thompson@des.nh.gov.

**What form should I use for bacteria samples when trying to lift a boil water order?** If the samples are part of your repeat or routine sampling requirements under a boil order, a compliance form should be used. If the samples will not be used for compliance monitoring and their sole purpose is to lift the boil order, the GSES ARF is the appropriate form to use.

Visit www2.des.state.nh.us/OneStop/-Public_Water_Systems_Query.aspx to access the GSES ARF form. If you have any questions regarding the proper use of the form, feel free to contact Barbara Davis at (603) 271-2542 (bacteria), Tricia Madore at (603) 271-3907 (chemical monitoring) or Joan Fitzsimmons at (603) 271-2516 (lead/copper). ■

## Water Suppliers and Consumers: Reach Out to Local Officials With New Publications

A new four-page guide published by the Source Water Collaborative shows local officials what they can do to protect drinking water. "Your Water, Your Decision" covers the basics in three areas: land use decisions, pricing of water-related services, and stewardship of water resources. The guide was developed by a leading social marketing firm for the Source Water Collaborative, a national group of 18 organizations interested in drinking water protection, land use planning, and related areas. Last April, the Collaborative published "Advice Worth Drinking," focusing on land use decisions and water supply protection. Both of the short, colorful publications can be downloaded at www.protectdrinkingwater.org (click on *Products and Tools*), where you can also learn more about the Collaborative and who in New Hampshire is involved (click on *Find Allies*). Hard copies of the documents are also available from DES's Drinking Water Source Protection Program. Contact Pierce Rigrod at (603) 271-0688.

# New Hampshire Approach to the Groundwater Rule

The Groundwater Rule, adopted by the U.S Environmental Protection Agency, goes into effect in December 2009. This federal rule, which can be viewed as the counterpart to the surface water treatment rule of nearly 20 years ago, addresses some well-documented cases of microbial contamination of groundwater. Systems affected most are groundwater systems using chlorine, planning new sources, or having occasional bacterial problems.

Although many New Hampshire public water systems have used chlorine for decades to address the risks of microbial contamination in sources, distribution and storage, the rule deals specifically with contamination that may originate in wells. The rule calls for rapid response to significant well deficiencies or to detection of fecal contamination. Adequacy of disinfection, where required, will be measured in terms of percent inactivation of viruses. Minimum inactivation of 99.99 percent, which equates to "4-log" inactivation, will be required where appropriate.

The federal rule includes both mandatory measures as well as aspects where there is considerable state flexibility in implementation. Mandatory measures include:

- **Triggered monitoring**, sampling water directly from the water supply well or wells, will be required in response to detection of coliforms in regular monthly samples unless 1) the system already provides at least the required 4-log virus disinfection, or 2) it can reasonably be determined that the contamination originated in the distribution system. Confirmed well contamination requires corrective action as noted below.
- **Sanitary surveys** will be required at three-year intervals for community systems and five-year intervals for non-community systems as is currently practiced in New Hampshire.
- **Corrective action** can include eliminating the source of contamination, correcting the deficiency, providing an alternate water source, or, providing disinfection to achieve a 4-log reduction of viruses. This last disinfection option also requires daily monitoring and monthly reporting to DES to document treatment.

Aspects of the rule where there are state options for implementation include:

- States must choose an **indicator organism** from among the three options presented in the rule: *E. coli*, *Enterococci*, and *coliphage* (a virus which infects coliform bacteria). Sampling protocols, cost, and reliability vary among these options.
- **Disinfection methods**, and their relative costs and benefits, to achieve 4-log disinfection need to be explored. The rule allows ultraviolet and membrane processes as well as chlorination.
- **Significant deficiencies** detected during sanitary surveys that could call for corrective action need to be determined.
- **Possible modifications to existing disinfection** to achieve virus inactivation need to be evaluated.

There has been some concern about the effect the rule will have on systems that currently provide disinfection and those that develop new well sources. Monitoring of fecal indicators at these sources may be needed to demonstrate an appropriate level of disinfection.

The DWGB will be organizing an advisory group to provide water industry input on some of these issues. You can email Sarah Pillsbury at Sarah.Pillsbury@des.nh.gov if you would like to participate in this workgroup. The rule is online at www.epa.gov/safewater/disinfection/gwr/index.html. ■

## Security Grant Applications Due April 30

The Businesses United for Water Security installation grant applications are due April 30. Community systems can receive up to $4,500 to pay for labor/installation costs associated with implementing security measures at their water systems, including backup generators and generator connection wiring. Applications and program information are available on the DES website at www.des.nh.gov/dwgb/buws or by contacting Johnna McKenna at (603) 271-7017.

# WaterSense Program Points Consumers to Products that Save Water

WaterSense, a partnership program sponsored by the U.S. Environmental Protection Agency, seeks to conserve our nation's water supply by helping consumers identify products that use water more efficiently through an easy-to-spot WaterSense label, while ensuring product performance. WaterSense labeled products are independently certified to use less water while performing as well as or better than less efficient models.

**Become A WaterSense Partner!** The WaterSense program is looking to partner with water utilities, government agencies, and other promotional partners, to help make water-efficient products and practices commonplace nation-wide. DES is actively recruiting water systems to join the program to promote water efficiency and the WaterSense label to customers.

Expanding the use of water-efficient products should be part of a comprehensive water conservation effort to reduce water and wastewater infrastructure costs and conserve resources for future generations. As a WaterSense partner, your water system will receive recognition from EPA and DES as an environmental steward, gain access to free conservation tools and resources, and be able to improve outreach efforts related to water efficiency.

To learn more about the WaterSense Program and how to become a partner, visit the WaterSense website at www.epa.gov/watersense, call the WaterSense Helpline at (866) WTR-SENS (987-7367), or contact DES at (603) 271-6685. ■

## Recent Staff Changes within the Bureau

Change is a popular theme these days and, over the past few months, a number of staff changes have occurred within the Drinking Water and Groundwater Bureau. Within the Source Protection Program, Jessica Morton and Tim Nowack have moved onto other positions at DES. Alicia Carlson has assumed Jessica's position and is now handling the Project WET program, youth education and the annual water festival. Christine Bowman has filled Tim's position and is now managing large community well sitings and groundwater withdrawals.

Kristina Stern and Donna Jones are new additions to the Monitoring and Enforcement Section. Kristina is responsible for processing chemical results and monitoring violations, while Donna is responsible for support in various areas of the chemical monitoring program and is the lab liaison for assisting public water systems.

Also, Gail Dailey has joined the Data Management Section and David Kelly has been hired to serve as the small system ombudsman providing technical assistance to small systems within the Capacity Assurance Program.

## Save The Date— Upcoming Emergency Planning Workshops

This fall, the U.S. Environmental Protection Agency (EPA) will host an Emergency Planning Tabletop Exercise Workshop which will bring together water and wastewater systems and local first responders. EPA will also be hosting National Incident Management System (NIMS) and Incident Command System (ICS) training for the water sector. Details regarding these workshops will be available later this summer by contacting Johnna McKenna at (603) 271-7017 or Johnna.Mckenna@des.nh.gov.

## Suggestions and Comments Welcome

If you have suggestions for articles or other comments, we would like to hear them! Contact Pierce Rigrod at (603) 271-0688 or Pierce.Rigrod@des.nh.gov with your ideas.

# Drinking Water Enforcement Activity in 2007

An important component of the Drinking Water and Groundwater Bureau's mission is to ensure that public water systems maintain compliance with federal and state drinking water regulations. To that end, DWGB offers many types of assistance, such as capacity development training, technical seminars, telephone and field technical assistance, monitoring reminder e-mails, financial assistance, and more. Despite this assistance, contamination issues and/or repeated violations of regulations sometimes require DWGB to undertake enforcement actions.

DWGB generally employs a hierarchy of enforcement actions beginning with a Letter of Deficiency (LOD). An LOD is a formal letter, sent by registered mail, which identifies violations of specific regulations and requests the water system owner to bring the system back into compliance by taking certain actions within specified time periods. During 2007, DWGB issued 249 LODs. Bacteria and chemical monitoring/reporting (M/R) violations and maximum contaminant level violations account for about half of the LODs issued in 2007. M/R violations can be easily avoided by frequently checking the water system's master sampling schedule, which is available online at www2.des.state.nh.us/OneStop/Public_ Water_Systems_Query.aspx.

An Administrative Order (AO) is issued in response to serious violations or when a system continues to commit violations after receiving an LOD. An AO is a legally enforceable document that requires the water system owner to correct violations by completing enumerated actions by specified deadlines. Most AOs are recorded at the appropriate county registry of deeds to alert prospective property buyers and financial institutions of compliance issues at a water system. Failure to comply with an AO may result in an Administrative Fine (AF) or referral of the case to the Attorney General's Office for imposition of criminal or civil penalties. DWGB issued 12 AOs in 2007. Although proceedings continue to resolve some AFs issued in previous years, no new AFs were imposed during 2007.

As noted above, the failure to comply with an Administrative Order is one type of case that can be referred to the Attorney General. On occasion, a violation is considered by DWGB to be so serious and/or intentional that the case is referred directly to the Attorney General's Office for enforcement without a previous LOD, AO, or AF having been issued. DWGB referred one such case in 2007.

An enforcement action was also initiated against a New Hampshire certified operator in 2007 by the EPA. In this particular case, EPA's Criminal Division brought charges against the operator in federal District Court in Concord for submitting false turbidity data to DES. Recently, the operator pled guilty and was sentenced to three years probation and ordered to perform 50 hours of community service. This case marks the second time in three years that court proceedings have been taken against an operator for submitting false reports to DES. (In 2006, an operator was fined $10,000 with $7,500 suspended if the operator does not violate state law again for two years, for submitting a false chemical test result to DES.)

DWGB also has the authority to require a public water system to issue a boil water order for a variety of health-related reasons, such as the discovery of *E. coli* or fecal bacteria in a water sample. In 2007, DWGB required a total of 36 boil orders to be instituted, an unusually high number compared to previous years. Current boil orders are listed on DES's website under the heading of Drinking Water Advisories at www.des.nh.gov.

LODs, AOs, and AFs issued by DES programs can be viewed online at www.des.nh.gov/legal/documents.

For more information on enforcement issues, contact Alan Leach at (603) 271-2854 or Alan.Leach@des.nh.gov, or Emily Jones at (603) 271-0713 or Emily.Jones@des.nh.gov. ■

## Improved Fact Sheet on Bulk Water Haulers

The DWGB recently updated the bulk water hauler fact sheet. This fact sheet lists vendors that provide emergency water supplies to a system. Please note that systems are required to notify the DWGB before any water is accepted from a bulk water hauler. Also, hauling equipment must be dedicated to the sole task of transporting potable water and meet the requirements of He-P 2103.10, Storage and Transportation of Bulk Water for Bottling. The updated fact sheet is available online at www.des.nh.gov/factsheets/ws/ws-18-2.htm.

# Understanding Operator Responsibilities

Public water system owners and operators each have legal responsibilities under federal and state rules. It is important that they understand their responsibilities and communicate with one another about them. Otherwise, serious management and legal problems can result. For example, in some cases, operators have disavowed responsibility for a part of system operations (e.g., routine inspections, sampling, or distribution system maintenance and repair) because the owner refuses to allow or pay for the operator to perform these duties. In such cases, both the owner and operator are subject to enforcement action.

Primary water system operators are responsible for *all* operational aspects of a public water system and water system owners are responsible for ensuring operators perform those duties. Among other things, primary operators must monitor any treatment; prepare and maintain water system records; file required reports in a timely manner; conduct or oversee all water system maintenance and repairs; conduct frequent system inspections; collect or oversee compliance sampling; attend training to complete DES operator continuing education requirements; and, most importantly, be available to address water system problems quickly and effectively as they arise. When an operator identifies maintenance or repair work that is needed to protect the public health and comply with regulations, and an owner does not provide funds to complete this work, an operator should document this issue in a letter to an owner.

Water system owner and primary operator responsibilities are spelled out in Env-Ws 367.14 and 15 (www.des.nh.gov/rules/envws-367.pdf). Please review these, and if you have any questions or concerns, please contact DES at (603) 271-2410 for clarification. Remember, the goal is to provide safe, reliable drinking water to your customers. It is imperative that primary operators know and perform all of their required duties to help achieve that goal. ■

# Water Audits and Leak Detection Offer for Assistance

The New Hampshire Department of Environmental Services and Granite State Rural Water Association have teamed up to provide water audit and leak detection assistance to public water systems. The goal of the program is to help water systems reduce unaccounted water loss and to demonstrate equipment and techniques that may be utilized to keep water losses low.

Leak detection is a fundamental component of water system operations and maintenance. Unfortunately, not all water systems routinely screen for lost water. Water systems should regularly conduct water audits and leak detection surveys to minimize the amount and cost of water loss.

A comprehensive water audit followed by a leak detection survey is analogous to a general checkup of the distribution system. During a water audit, the system operator determines how much water is withdrawn from sources, subtracts the water delivered to customers, and accounts for non-billable water use, e.g., line flushing, hydrant flushing, meter error. Excluding non-billable water use, the difference between the volume withdrawn from the source and received by customers is the amount lost during distribution. The cost to pump, treat, and distribute water lost during distribution is absorbed by the system or passed along to customers. The better solution is to find and repair the leaks.

There is a wide assortment of leak detection equipment. Most equipment relies on sound waves generated by the leak itself resonating along pipe walls. Equipment may be as simple as an amplifier and speaker, or as intricate as a correlator that uses algorithms to listen for and pinpoint leak locations. The effectiveness of any technique is determined by the materials used in the distribution system, the overburden surrounding the pipe, and the experience of the user. Ultimately, the goal of any leak detection survey is to recover lost water and minimize the response time to find and repair leaks.

To learn more about audits and leak detection, or to request assistance, please contact Derek Bennett at (603) 271-6685. Assistance is prioritized based on need due to limited resources. ■

# Continuous Improvement for the Local Source Water Protection Grant Program

Over the past 11 years, the DWGB has awarded over $2.2 million in grants for 178 source water protection projects. Approximately $200,000 is available every fall for source water protection projects that may include the development of protection ordinances, groundwater reclassification, best management practice implementation, and source security projects. This annual grant program is popular among systems of all sizes, and for the past several years has received more requests for funds than there are available. For this past round, grant requests exceeded $400,000.

The increased competitiveness of the program requires continuous improvements to make sure the most eligible projects are chosen and that the program's resources maximize the protection of public drinking water sources. Therefore, the program has made modifications to the grant applications and agreements every year. These include additional questions in the application packet and required quarterly reporting to help ensure that projects stay on track. For the 2009 grant round, applications will need to list specific staff and their responsibilities on the project and include maintenance commitments for structural projects. Scoring criteria for security grants will favor existing sources over new sources, as plans and budgets for new sources should include standard security features.

Grant agreements will now include conditions that outline requirements concerning changes to the scope of work, completion dates, and deadline extensions to ensure quality projects and useful products.

The grants continue to encourage projects that provide protection for multiple sources that are currently unprotected. To allow for bigger and better projects, the maximum grant amount has been increased from $15,000 to $20,000. For more information about the program, visit www.des.nh.gov/-dwspp/grants.htm or contact Johnna McKenna at (603) 271-7017 or Johnna.Mckenna@des.nh.gov. Applications for the next round of funding will be available this summer and will be due November 3, 2008. ■

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